

ENERGY STAR® QUALIFIED MANUFACTURED HOMES: GUIDE FOR RETAILERS

WITH INSTRUCTIONS FOR INSTALLERS AND HVAC CONTRACTORS

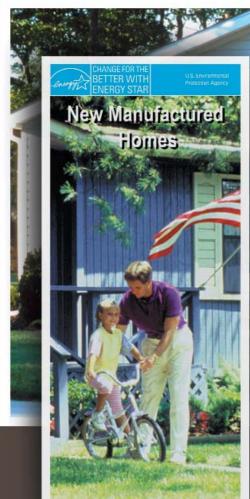
Excellence in Design, Manufacturing and Installation Series

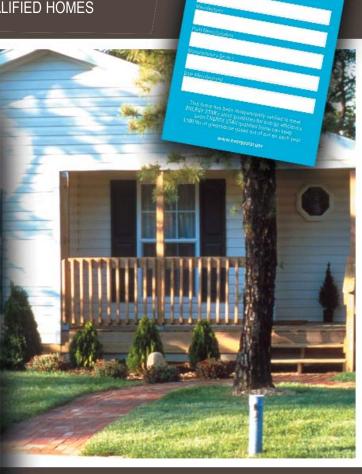
BENEFITS FOR RETAILERS AND HOMEOWNERS

ROLES AND RESPONSIBILITIES

MARKETING AND SALES TOOLS

ORDERING AND INSTALLING ENERGY STAR QUALIFIED HOMES









QUALIFIED HOME



ENERGY STAR® QUALIFIED MANUFACTURED HOMES: GUIDE FOR RETAILERS

with instructions for installers and HVAC contractors

Excellence in Design, Manufacturing and Installation Series

The Manufactured Housing Research Alliance wishes to acknowledge the assistance, advice and guidance of a number of people without whose help this publication would not have been possible.

Gary de Haas, Luxury Homes Charley Boyer, Oak Creek Homes Francis Conlin, Comfortworks Robert Garcia, Fleetwood Enterprises, Inc. Cheryl Hagar, Mid-America Homes Center, Inc. Bert Kessler, Palm Harbor Homes Michael Lubliner, Washington State University Brian Ng, US Environmental Protection Agency Mark Nunn, Manufactured Housing Institute Ann Parman, Manufactured Housing Institute George Porter, Manufactured Home Resources, Inc. Sam Rashkin, US Environmental Protection Agency Mark Reeder, Factory Homes Outlet Curtis Richards, Palm Harbor Homes Bruce Savage, Manufactured Housing Institute Billy Woodard, Park Avenue Homes, Inc.

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Disclaimer

The Manufactured Housing Research Alliance, its members, consultants, contractors and representatives make no representations, warranty or guarantee, express or implied, as to the accuracy or appropriateness of any materials or information in this manual for use in a specific home, nor assume any liability for the use of the information, methods, or materials contained herein, or for damages arising from any such use.

ISSN 1529-3424

ABOUT ENERGY STAR FOR HOMES
ENERGY STAR qualified homes are more energy efficient with superior insulation, high efficiency equipment and tighter envelopes and ducts. The ENERGY STAR for Homes program is government backed.
BENEFITS FOR RETAILERS AND HOMEOWNERS
Retailers should promote and sell ENERGY STAR qualified homes because they cost less to operate, compare favorably to site-built ENERGY STAR qualified homes, are built with advanced technology and result in higher customer satisfaction.
ROLES AND RESPONSIBILITIES
Retailers promote and sell ENERGY STAR qualified manufactured homes, install the homes in keeping with ENERGY STAR requirements, complete the ENERGY STAR Site Installation Checklist and apply the ENERGY STAR label.
MARKETING AND SALES TOOLS6
EPA provides to retailers at no cost the use of the ENERGY STAR logo, brochures, customizable sales literature, an advertising partnership program and a listing on the ENERGY STAR Partner Locator website. Other incentive programs may be available regionally.
ORDERING AND INSTALLING ENERGY STAR QUALIFIED HOMES
The retailer's commitment to the program is protected though basic quality control procedures that ensure all participants adhere to the same rules.
RESOURCE SHEETS
1. ENERGY STAR Design Features
2. ENERGY STAR Partnership Agreement
3. Sample ENERGY STAR Site Installation Checklist
4. Instructions for Installers
5. Instructions for HVAC Contractors

This Guide was developed for the manufactured housing industry to provide information necessary to promote, specify, purchase, install and label homes that comply with ENERGY STAR guidelines. For the purposes of this Guide, a manufactured home is defined as a home built in a factory meeting the federal Manufactured Home Construction and Safety Standards, at 24 CFR 3280, commonly referred to as the HUD-Code. An ENERGY STAR qualified (formerly called ENERGY STAR labeled) manufactured home is a manufactured home that has earned the ENERGY STAR label.

WHAT IS ENERGY STAR?

ENERGY STAR is a nationally recognized, voluntary labeling program designed to identify and promote energy-efficient homes, buildings and products to consumers and business owners across the United States. Initiated by the US Environmental Protection Agency (EPA) in 1992, ENERGY STAR is now a joint effort of EPA



and the US Department of Energy (DOE), with each agency taking responsibility for promoting the ENERGY STAR label in particular product categories. The EPA is responsible for administering the ENERGY STAR for Homes program.

WHAT IS AN ENERGY STAR QUALIFIED HOME?

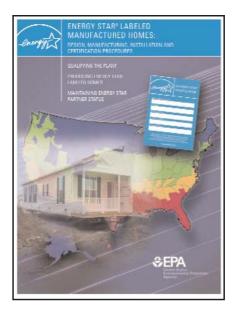
An ENERGY STAR qualified home is at least 30% more energy efficient in its heating, cooling and water heating than a comparable home built to the 1993 Model Energy Code (MEC). This increased level of energy efficiency can be met using standard technologies and manufacturing practices by successfully integrating three key home components:

- An energy-efficient building envelope (effective insulation, tight construction, advanced windows)
- Energy-efficient air distribution (air-tight, well-insulated ducts)
- Energy-efficient equipment (space heating and cooling and hot water heating).

Some of the specific features that make an ENERGY STAR qualified home more energy efficient are listed in **RESOURCE SHEET 1**.



ENERGY STAR qualified homes should not be confused with **ENERGY STAR qualified products**. ENERGY STAR qualified homes are designed to meet strict energy efficiency targets in terms of their overall heating, cooling and water heating energy usage. They may or may not contain ENERGY STAR qualified products such as appliances, lighting or windows. Likewise, the presence in a home of ENERGY STAR qualified products does not indicate that the home itself carries the ENERGY STAR label or meets ENERGY STAR levels of energy efficiency for heating, cooling and water heating.



SOURCES FOR ADDITIONAL INFORMATION

Additional information about ENERGY STAR qualified homes—including marketing materials, the ENERGY STAR partnership agreement, copies of forms, ENERGY STAR logos and the ENERGY STAR label—are available from EPA on the ENERGY STAR website.

EPA has produced a set of guidelines for manufacturers titled ENERGY STAR LABELED HOMES Design, Manufacturing, Installation and Certification Procedures. This document details the steps for the manufacturer to qualify to build ENERGY STAR qualified homes, design requirements for ENERGY STAR qualified homes and ongoing verification and testing requirements.

Wherever this www icon appears, the information referenced is available at the following websites:

MHRA website: http://www.mhrahome.org

ENERGY STAR for Homes website: http://www.energystar.gov/homes

BENEFITS FOR RETAILERS AND HOMEOWNERS

TELLING THE ENERGY STAR STORY

At least six reasons establish why a retailer should offer, promote and sell ENERGY STAR qualified homes and why a customer should buy one:

- 1. Lower Operating Costs. ENERGY STAR qualified homes—because they are highly energy efficient—have lower monthly operating costs. This can reduce a homeowner's monthly out-of-pocket expenses and potentially increase the resale value of a home. Table 1 shows examples of how energy savings can reduce monthly housing costs. Like a car's MPG rating, actual savings will vary.
 - ❖ The additional cost of an ENERGY STAR qualified home is included in the home loan, increasing payments by perhaps \$5 to \$15 per month.
 - ❖ At the same time, this cost is offset by energy savings of approximately \$25 to \$65 per month, resulting in a net savings of about \$20 to \$50. This is money in the homeowner's pocket.
 - Over 10 years, this adds up to \$2,400 to \$6,000 of savings.
- 2. Customer Satisfaction. The efficiency measures built into an ENERGY STAR qualified home have other benefits that increase customer satisfaction. They are typically more comfortable, durable, quiet, environmentally friendly and have superior moisture control compared to non-ENERGY STAR qualified homes—all potential benefits for home owners. The value of these features can increase over time, making an ENERGY STAR qualified home an excellent investment.

Estimating energy savings for your customers

In most parts of the country, ENERGY STAR qualified homes are designed and built to use 30% less energy than homes built to the 1993 Model Energy Code. The actual savings will vary depending on the local price of energy, homeowner lifestyle and specific efficiency measures incorporated into the home.

- **3. Parity with Site Built.** Since there is a single ENERGY STAR label covering all types of housing, the program offers another opportunity for a manufactured housing retailer to demonstrate parity with or superiority to site-built competitors.
- **4.** Third-party Verified. ENERGY STAR is third-party verified. An EPA-authorized independent agent verifies the manufacturer's energy efficient design and compliance with ENERGY STAR construction requirements.
- 5. Government Backed. The ENERGY STAR label can be a powerful sales tool. ENERGY STAR is a nationally recognized brand, backed and promoted by two federal agencies (US EPA and US DOE). Being associated with this brand can differentiate a retailer from industry peers and from site-built homes in the same market.





6. Advanced Technology. ENERGY STAR qualified homes incorporate advanced technologies into their construction that have been demonstrated to reduce energy usage and expenditure. Because the home is built to the latest technological standards, it is more desirable and future homebuyers will demand these features. (See RESOURCE SHEET 1)

These considerations make a strong argument for participating in the program.

Following is a comparison of annual energy costs for ENERGY STAR qualified manufactured homes and non-ENERGY STAR qualified manufactured homes. The comparison is an approximation of the average annual savings an ENERGY STAR homeowner can expect compared to an otherwise identical non-ENERGY STAR qualified home in the same location.

Table 1. **Comparison of Energy Costs**

Location	ENERGY STAR home	Non- ENERGY STAR home	Annual savings with ENERGY STAR	Monthly savings with ENERGY STAR
Kansas City, MO ¹	\$1,478	\$1,949	\$471	\$39
Lubbock, TX ²	\$1,003	\$1,732	\$729	\$61
Binghamton, NY ³	\$2,483	\$3,282	\$799	\$67

Natural gas heated double section home with electric water heating All electric single section home Propane heated home with electric water heating

ROLES AND RESPONSIBILITIES

Manufacturers, retailers and site contractors each have an important role to play in the successful sale and completion of ENERGY STAR qualified manufactured homes. The responsibilities of each party are summarized in the table below.

able 2. Responsibilities Under the ENERGY STAR Qualified Manufactured Homes Program

Responsibility	Manufacturer	Retailer	Installer/HVAC Contractor
Become an ENERGY STAR Partner (see details below)	✓	✓	
Certify that the plant meets the ENERGY STAR requirements	✓		
Design the home to meet ENERGY STAR criteria	✓		
Construct homes to meet ENERGY STAR criteria	✓		
Promote and/or sell ENERGY STAR qualified manufactured homes	✓	√	
Install homes in keeping with ENERGY STAR requirements		✓	✓
Complete ENERGY STAR Site Installation Checklist (note 1)	✓	✓	✓
Apply the ENERGY STAR label (note 2)	✓	✓	
Inform EPA of the completion of all ENERGY STAR qualified homes (quarterly)	✓		
Test sample homes (annually)	✓		

Note 1: The manufacturer will designate a representative to complete the checklist (a sample is included in this Guide). This representative may be the retailer.

BECOMING AN ENERGY STAR PARTNER

Becoming an ENERGY STAR Partner is simple and free. By becoming an ENERGY STAR Partner, the retailer will be entitled to a number of benefits. To register as an ENERGY STAR retailer partner, complete the ENERGY STAR Partnership Agreement and mail or fax it to EPA (see RESOURCE SHEET 2). Becoming a partner is encouraged, but not required, to sell ENERGY STAR qualified manufactured homes.

Benefits of becoming an ENERGY STAR Partner include:

- · Listing on the Partner Locator on the ENERGY STAR website
- · Recognition by EPA for sales of ENERGY STAR qualified homes
- · Access to partner-only ENERGY STAR logos for use in marketing materials
- The right to display the ENERGY STAR Partner plaque (available from MHRA)

Note 2: The manufacturer may delegate this responsibility to their site representative or the homeowner. This may be done by the retailer.

MARKETING AND SALES TOOLS

While EPA and individual manufacturers may conduct national and regional advertising programs promoting ENERGY STAR qualified homes, it is the retailer who is best positioned to promote and sell ENERGY STAR qualified manufactured homes locally. To help sell the value of ENERGY STAR qualified homes, EPA provides at no cost the following materials for retailers. All of the materials are available on the Web.

The ENERGY STAR logo

ENERGY STAR logos and promotional marks designate homes that are independently verified to be energy efficient. These logos are available for promotional purposes. Certain rules and restrictions apply.





• Ready-made Consumer Brochures

Free ENERGY STAR sales literature for manufactured home retailers is available for download from the ENERGY STAR website or from the ENERGY STAR Hotline at 1-888-STAR-YES.

ENERGY STAR Home Sales Toolkit

ENERGY STAR for Homes has developed a software-based tool to assist ENERGY STAR retailers in their marketing and sales efforts. The ENERGY STAR for Homes Sales Toolkit enables a user to create customized marketing and sales flyers highlighting their company and logo along with their homes' ENERGY STAR features and benefits.



• ENERGY STAR Qualified Home Fact Sheets

ENERGY STAR for Homes has also developed a series of fact sheets that explain the benefits of various ENERGY STAR qualified home design features including:

- Tight Construction (Reduced Air Infiltration)
- Tight Ducts
- Improved Insulation
- High Performance Windows
- Energy Efficient Heating & Cooling Equipment



• Advertising and Promotion Assistance

Advertising and promotion assistance may be available for retailers of ENERGY STAR qualified homes in your area. EPA will invest advertising dollars in markets where at least three partners (such as builders, retailers, manufacturers or utilities) team up to promote their ENERGY STAR qualified homes.

• Listing on the ENERGY STAR Partner Locator

All active ENERGY STAR Partners are listed on a state-specific, national online directory where homebuyers can find retailers selling ENERGY STAR qualified manufactured homes.

· Other Incentive Programs

Your state energy office or local electric utility may also provide incentives and/or rebates for sellers or purchasers of ENERGY STAR qualified homes. Visit ENERGY STAR's Partner Locator Tool on the Web for a list of state and utility partners and their incentive programs.

ORDERING AND INSTALLING ENERGY STAR QUALIFIED HOMES

The process for ordering, specifying and installing ENERGY STAR qualified homes includes a few basic steps and quality-control procedures. Strict quality control holds all participants to the same standard, protecting the retailer's investment in the program.

Step 1: Locate a source for ENERGY STAR qualified homes

Many manufactured home plants are qualified to produce ENERGY STAR qualified manufactured homes. Contact your manufacturer's representative for details.

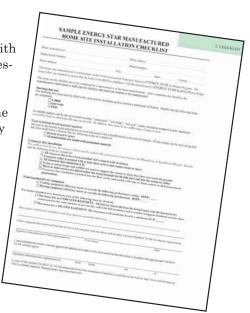
Step 2: Specify and order ENERGY STAR qualified homes

Check with the manufacturer for specific ordering procedures. Make sure to specify a home manufactured to comply with ENERGY STAR requirements.

Step 3: Complete the Site Installation Checklist

A Site Installation Checklist is provided by the manufacturer with each ENERGY STAR qualified home. The manufacturer will designate a representative who is responsible for ensuring that the site installation checklist is properly completed, signed and returned to the plant. This representative can be an agent of the manufacturer, such as a factory set-up crew leader, but typically it is the responsibility of the retailer. Retailers should make sure they know who the manufacturer has designated as their assigned representative and how homes are to be field verified. A copy of a sample Site Installation Checklist is included in RESOURCE SHEET 3.

Completing the manufacturer's Site Installation Checklist will require the assistance of the home installer and HVAC contractor (for homes with central air conditioning or a heat pump). Responsibilities of the installer and HVAC contractor are described in RESOURCE SHEETS 4 and 5.





Step 4: Affix the ENERGY STAR Label

The ENERGY STAR label is a sticker that should be placed adjacent to the HUD Data Plate (HUD label) or inside the electric panel cover. The manufacturer may install the label in the plant but only when firm agreements are in place to complete the field installations and checklist requirements. Otherwise, the manufacturer may provide the label to the retailer to affix or send it to the homeowner after the home is installed.

ENERGY STAR QUALIFIED HOME DESIGN FEATURES

To qualify under the ENERGY STAR program, a manufactured home is required to be at least 30 percent more efficient than a comparable home built to the 1993 Model Energy Code. The 30 percent refers not just to the thermal envelope, but to the estimate of total energy use for space heating, space cooling and water heating. ENERGY STAR qualified homes incorporate a number of energy-saving design features as described below.

The manufacturer may combine features in a variety of ways to meet the energy savings target. The manufacturer can provide information on the ENERGY STAR features they plan to use. A list of pre-approved features may be found in *ENERGY STAR LABELED HOMES Design, Manufacturing, Installation and Certification Procedures*.

Some of the key features that the manufacturer may use in combination to create an ENERGY STAR qualified manufactured home include the following:



 Whole home leakage. All ENERGY STAR qualified homes are designed and built to have a tight shell to minimize air leakage through walls, ceilings and floors.



 Insulation. ENERGY STAR qualified homes are required to have insulation levels in the floors, walls and ceilings necessary to meet overall Uo-value requirements.



• Windows. Windows in ENERGY STAR qualified manufactured homes are required to have superior insulation properties and reflect specified amounts of the sun's heat in hot climates. (Simply using ENERGY STAR qualified windows does not automatically qualify a home for the ENERGY STAR label. At the same time ENERGY STAR qualified homes are not required to use ENERGY STAR qualified windows.)



- Heating and Cooling System. ENERGY STAR qualified homes are required to include superior efficiency levels for the furnace and air conditioner, tight ductwork to minimize leakage and insulated crossover ducts. Some homes may also be required to have a programmable thermostat.
- Water heating. Some ENERGY STAR qualified home designs are required to have superior hot water equipment efficiency ratings.



• Basements. All basements in ENERGY STAR qualified homes must either be separated by ENERGY STAR levels of insulation and air barriers from the living area or have fully insulated foundation walls.

The following are three examples comparing the energy efficiency of ENERGY STAR with conventional construction. Actual savings vary by location, home design and type of energy used in the home.

Table 3. Home in Kansas City, MO with Natural Gas Heating

28'x60' d	louble section home	ENERGY STAR	Non-ENERGY STAR*
	Wall insulation	R-19	R-11
Φ	Floor insulation	R-33	R-22
Envelope	Roof insulation	R-33	R-22
En	Window U-value	0.35	0.75
	Window SHGC (max)	0.55	No requirement
	Air leakage (max)	7.0 ACH ₅₀	No requirement
	Heating efficiency (Natural gas heat)	0.80 AFUE	0.78 AFUE
£. <u></u>	Cooling efficiency	12.0 SEER	10.0 SEER
Heating and cooling	Thermostat	Programmable	No requirement
and	Duct leakage (max)	5%	No requirement
	Crossover duct insulation	R-8	R-4
	Water heater efficiency	0.88 EF	0.88 EF
Annual heating, cooling and water heating cost		\$1,478	\$1,949
Savings with ENERGY STAR		\$471	_

Table 4. Home in Lubbock, TX with Electric Heating

14'x70' s	single section home	ENERGY STAR	Non-ENERGY STAR*
	Wall insulation	R-13	R-11
Φ	Floor insulation	R-33	R-11
Envelope	Roof insulation	R-33	R-22
En	Window U-value	0.35	0.80
	Window SHGC (max)	0.40	No requirement
	Air leakage (max)	7.0 ACH ₅₀	No requirement
	Heating efficiency (Electric heat)	7.2 HSPF heat pump	Heat pump not required
g.ii	Cooling efficiency	12.0 SEER	10.0 SEER
Heating and cooling	Thermostat	Programmable	No requirement
and H	Duct leakage (max)	5%	No requirement
	Crossover duct insulation	N/A	N/A
	Water heater efficiency	0.88 EF	0.88 EF
Annual heating, cooling and water heating cost		\$1,003	\$1,732
Savings with ENERGY STAR		\$699	_

 Table 5.
 Home in Binghamton, NY with Propane Heating

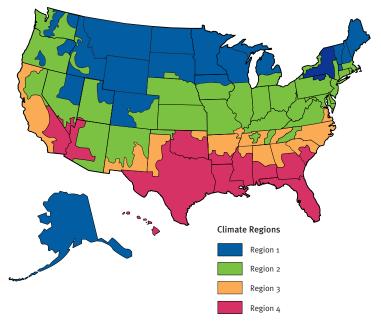
28'x60'	double section home	ENERGY STAR	Non-ENERGY STAR*
	Wall insulation	R-19	R-13
Φ	Floor insulation	R-33	R-22
Envelope	Roof insulation	R-33	R-30
En	Window U-value	0.35	0.59
	Window SHGC (max)	0.55	No requirement
	Air leakage (max)	7.0 ACH ₅₀	No requirement
	Heating efficiency (Propane heat)	0.90 AFUE	0.78 AFUE
g ng	Cooling efficiency	12.0 SEER	10.0 SEER
eatin	Thermostat	Programmable	No requirement
Heating and cooling	Duct leakage (max)	5%	No requirement
	Crossover duct insulation	R-8	R-4
	Water heater efficiency	0.91 EF	0.88 EF
Annual heating, cooling and water heating cost		\$2,483	\$3,282
Savings with ENERGY STAR		\$799	_

^{*} These are typical home specifications only, specifications of actual homes will vary

CLIMATE REGION

ENERGY STAR qualified homes are designed for one of four specific regions of the country known as ENERGY STAR Climate Regions. There are different requirements for each of the four ENERGY STAR regions. www

The map provides a general idea of the area covered by each climate region. ENERGY STAR LABELED HOMES Design, Manufacturing, Installation and Certification Procedures contains a county-by-county listing of the ENERGY STAR regions.¹



ENERGY STAR climate region map for manufactured homes

¹ The ENERGY STAR regions are NOT the same as the thermal zones contained in the HUD Standards for manufactured homes, nor do the ENERGY STAR region boundaries coincide with state boundaries. A state may include more than one ENERGY STAR region.

ENERGY STAR PARTNERSHIP AGREEMENT

ENERGY STAR® Partnership Agreement www



For Home Builders and Verification Organizations

Organization Name ¹ :			
Address:	(City/State ¹ /Zip:	
Telephone ¹ :	Fax:	Web site1:	
Major metro area served ¹ :		To be dis	olayed on the ENERGY STAR Web site
For HOMEBUILDERS: Please Complete	te the Following Section		
 Please specify your partner type 	e (select only one):		
Site-built Home Builder:	Local Builder	Division/Subsidiary	Corporate (National)
Community Developer*: *To be eligible for partnership, a communi	Community De		t 100% ENERGY STAR qualified homes.
Manufactured Home Builder:	Plant	Retailer/Community	Corporate (HQ/Division)
 Average number of homes built 	t per year:		
	will be denoted with a speci	ial 100% icon on the ENERGY :	ding 100% of their homes as STAR partner locator when at least tt, please initial here:
 ENERGY STAR Advanced Lightin an ENERGY STAR Advanced Lig icon on the ENERGY STAR partn this commitment, please initial I 	hting Package to their home er locator. Please refer to the	buyers. This commitment will	o builders who commit to offering be denoted with a special ALP document to learn more. To make
For VERIFICATION ORGANIZATIONS:	Please Complete the Followi	ng Section	
 Please specify your partner 	type: Accredited H	ERS/BOP Provider Ce	rtified HERS Rater/BOP Inspector
For Raters and Inspectors, r	olease specify your Accredite	ed Provider:	
Marketing / Sales Contact			
Name:	Title:		
Phone:	² A valid e-m	nail address is required for online acce	ess to the ENERGY STAR marks
Name:	Title:		
Phone:	E-mail ² :		
	² A valid e-m	ail address is required for online acce	ss to the ENERGY STAR marks
Authorized Company Representativ	re (printed name):		
Title:	E-mail ² :		-
	² A valid	d e-mail address is required for online	access to the ENERGY STAR marks
Signature:		Date:	
To be completed by US EPA:			
Kathleen Hogan; Director, Climate Pro	otection Partnerships Division, U	J.S. Environmental Protection A	gency
Signature:		Date:	

ENERGY STAR® Partnership Agreement

For Home Builders and Verification Organizations



Mail this form to:

ENERGY STAR for Homes US EPA (mail code 6202J) 1200 Pennsylvania Ave, NW Washington, DC 20460 Fax this form to:

202-343-2200

For more information please call the ENERGY STAR Hotline at 1-888-STAR-YES or visit: www.energystar.gov/homes

ENERGY STAR Background Information

EPA's **ENERGY STAR** helps consumers, businesses, and public organizations protect the environment through superior energy efficiency. **ENERGY STAR for Homes** promotes energy-efficient homes that can improve builder profitability, improve home quality and homeowner comfort, lower energy demand, and reduce air pollution. ENERGY STAR qualified homes are third-party verified to be at least 30% more energy efficient than homes built to the 1993 national Model Energy Code or 15% more efficient than state energy code, whichever is more rigorous. These savings are based on heating, cooling, and hot water energy use. Savings are typically achieved through a combination of: envelope upgrades, high performance windows, controlled air infiltration, upgraded heating and air conditioning systems, tight duct systems and upgraded water-heating equipment. EPA encourages partners to equip ENERGY STAR qualified homes with energy-efficient lighting and appliances and with features that will improve indoor air quality to protect occupant health.

ENERGY STAR's Commitments to Partners

- Increase awareness of the ENERGY STAR label by distributing key messages on the benefits of ENERGY STAR qualified homes and homes-related products.
- Provide (via the ENERGY STAR Web site, Hotline, e-mail or other means) current ENERGY STAR news, information, and reference documents.
- 3. Provide ENERGY STAR Partners with public recognition through the online ENERGY STAR partner locator tool, special awards, and other media for their involvement in ENERGY STAR and role in protecting the environment.
- 4. Respond expediently to any Partner requests for information or clarification on ENERGY STAR policies.

General Commitments for ENERGY STAR Partners

- 1. Use the Partnership and the ENERGY STAR label to promote energy efficiency as an easy and desirable option for new homebuyers to prevent pollution, protect the environment, and save money on energy bills.
- Adhere to the ENERGY STAR Identity Guidelines (available at www.energystar.gov/marks) and ensure that authorized representatives, such as advertising agencies, distributors, and subcontractors, also comply.
- 3. Adhere to the ENERGY STAR Web Linking Guidelines (available at www.energystar.gov/partners). Failure to do so can result in the loss of linking privileges from the ENERGY STAR Web site.
- 4. Build at least one ENERGY STAR qualified home within any ongoing 12-month period. Partners not fulfilling this requirement will be deemed 'inactive,' thereby forfeiting all rights to the ENERGY STAR name and mark, their listing on the online ENERGY STAR partner locator tool, and any inclusion in ENERGY STAR promotional materials.
- 5. Affix an ENERGY STAR label to all homes that are independently verified to meet the ENERGY STAR performance guidelines.
- BUILDER PARTNERS: Clearly inform homebuyers when their new homes have qualified for the ENERGY STAR label and be able to describe the features and benefits of these ENERGY STAR qualified homes.
- BUILDER PARTNERS: Provide a home energy rating report or relevant Builder Option Package for any qualified home upon EPA's request.
- 8. ACCREDITED HERS or BOP PROVIDERS and CERTIFIED MANUFACTURED HOME PLANTS: Submit quarterly reports to ENERGY STAR specifying the number of homes verified as meeting ENERGY STAR performance guidelines.
- MANUFACTURED HOME PARTNERS: Comply with the terms set forth in ENERGY STAR Labeled Manufactured Homes: Design, Manufacturing, Installation and Certification Procedures (available at <u>www.energystar.gov/homes</u>).

General Terms and Disclaimers

- Partner will not construe, claim, or imply that its participation in ENERGY STAR constitutes federal government approval, acceptance, or endorsement of anything other than the Partner's commitment to ENERGY STAR. Partnership does not constitute federal government endorsement of the Partner or its homes or services.
- 2. Partner understands that the activities it undertakes in connection with ENERGY STAR are voluntary and not intended to provide services to the federal government. As such, the Partner will not submit a claim for compensation to any federal agency.
- 3. Partner and ENERGY STAR will assume good faith as a general principle for resolving conflict and will seek to resolve all matters informally, so as to preserve maximum public confidence in ENERGY STAR.
- 4. This agreement is voluntary and can be terminated by either party at any time for any reason, with no penalty.
- 5. Failure to comply with any of the terms of this Partnership Agreement can result in its termination and cessation of access to the benefits of ENERGY STAR, including use of the marks.
- 6. ENERGY STAR will actively pursue resolution of noncompliance related to the use of the ENERGY STAR marks.

SAMPLE ENERGY STAR MANUFACTURED HOME SITE INSTALLATION CHECKLIST

Home manu	ufacturer:	Plant addres	SS:	
Home Serial Number:		Model numb	per:	
Home addre	ess:	City:	State:	County:
This home vare required	was manufactured in conformance to d to ensure that the home is installed	the US Environmental Protection Age in compliance with the manufacturer's	ency's ENERGY STA ENERGY STAR Q	AR for Homes Program. The items below ualified Home design.
	on this checklist are to be completed ive shall sign the checklist and return		facturer. After com	oleting the checklist, the manufacturer's
completed:	ge line areas must be filled with a no	n-porous insulating gasket creating a p	permanent air barrie	r. Identify that the following items are
	Floor			
		ems, including proprietary gaskets, foa tion, there must be no visible signs of g		ped in poly, and insulation covered by
All tears in tand other s	ottom board material repaired the bottom board material are covere mall holes.) Identify that the following Bottom board is intact All penetrations are sealed with	g items are completed:	orevent air leakage.	(Foam sealant can be used on lag bolt
For multi-se the following	g items are completed: All exterior ducts have been inst Crossover collar is secured to th All exterior duct insulation is R Nylon or metal straps and saddle Three or more screws are placed	t be sealed with a permanent connection called and wrapped with insulation the trunk with at least three screws at	nd cannot rotate o duct; duct does no ble duct and into t	t touch the ground he crossover collar
		eets or exceeds the following perfor eets or exceeds the following specifi		
_	constructed in the same manner door.	ASEMENT. All interior stairwells fro	on and a weather-	stripped, insulated exterior
	This home has a HEATED BASE	MENT. The basement wall insulation	level is a minimu	m of: R,
Description	of deficient installation and steps take	ken to correct the deficiency:		
I have inspe	ected this home and find that all site	work complies with the above and all o	ther relevant ENEF	RGY STAR for Homes requirements.
Signature (I	Manufacturer's field representative)	Print Name		Date
I have chec climate regi		address provided on this form and find	that the home is lo	cated in the appropriate ENERGY STAR
Signature (I	Manufacturer's representative)	Print Name		Date

A copy of the Sample ENERGY STAR Manufactured Home Site Installation Checklist is available on the web at: http://www.mhrahome.org. This is a model checklist. Manufacturers may have their own. www.

INSTRUCTIONS FOR INSTALLERS

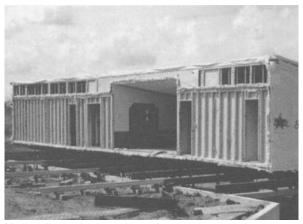
The items critical for proper home installation are listed on the ENERGY STAR Site Installation Checklist (see **Resource Sheet 3**). This Checklist is created by the manufacturer and completed by their representative (often the retailer) on site. It is the responsibility of the installer to properly install the home in accordance with the ENERGY STAR Site Installation Checklist. Detailed descriptions and diagrams of the proper way to perform these tasks are included below.

Marriage line seal

ENERGY STAR qualified homes are designed with tight seals to minimize air leakage. The marriage lines at the ceiling, end walls and floor must be filled with a non-porous insulating gasket creating a permanent air barrier. Acceptable gaskets can be one or two-part systems, including proprietary gaskets, foams, insulation wrapped in poly, or insulation covered by butyl or other long-life tape on one side. Any visible gaps or tears in the seal should be fully sealed with foam sealant.



Installing a marriage line gasket



Marriage line gaskets must be continuous

Bottom board

All tears in the bottom board must be repaired to prevent air leakage using a material designed for use on manufactured home bottom boards. Large tears should be covered and sealed with a durable patch. Foam sealant may be used on lag bolt holes and other small openings.



Using mastic to seal a bottom board patch



Installing a bottom board patch with a stitch stapler

□ Basements

ENERGY STAR qualified homes are not required to have basements. However, if the home is placed over a basement, the following criteria must be met:

- For unheated basements, all interior stairwells from the heated space into the basement must be constructed in the same manner (full insulation and air retarder) as an exterior wall and include a weather-stripped, insulated exterior door.
- For heated basements, the basement walls must have at least the insulation R-value specified on the Site Installation Checklist.

□ Crossover duct

ENERGY STAR qualified homes are designed to minimize duct leakage. For multi-section homes, the crossover ducts must be installed and sealed with a permanent connection per the Manufacturer's Installation Manual. The following steps should be followed to install a flexible crossover duct:

Step 1. Make sure the crossover duct is wrapped with insulation of at least the R-value specified on the manufacturer's Site Installation Checklist—generally a minimum of R-6 or R-8.

Step 2. Slide the inner liner over the crossover collar up to and against the base of the home's trunk duct. The crossover collar must be secured to the trunk with at least three screws so that it cannot rotate or move. Duct tape may be used to temporarily hold the inner liner in place. Install a large nylon zip tie over the inner liner just above the "ridge" around the crossover collar.

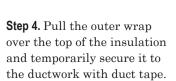


Step 2



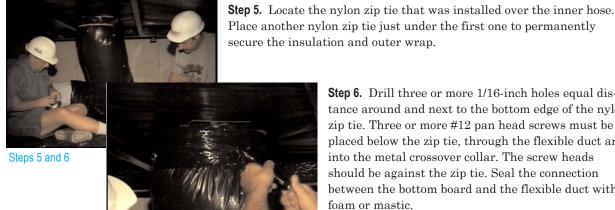
Step 3

Step 3. Bring the insulation up over the zip tie and above the home's bottom board. Crossover duct insulation must be pushed into the floor cavity. Temporarily duct tape it against the base of the trunk duct.





Step 4



Step 6. Drill three or more 1/16-inch holes equal distance around and next to the bottom edge of the nylon zip tie. Three or more #12 pan head screws must be placed below the zip tie, through the flexible duct and into the metal crossover collar. The screw heads should be against the zip tie. Seal the connection between the bottom board and the flexible duct with foam or mastic.



Step 8

- **Step 7.** Follow the same procedure (steps 2-6) on the other side of the home where the other end of the flex duct connects to the other half of the home. There should not be excess length of flexible duct in the system. Trim the crossover duct to length prior to fastening the second
- **Step 8.** Once installed, the crossover duct must not touch the ground. Nylon or metal straps and saddles may be used for support. If clearance is not sufficient for straps, rigid foam insulation board may be placed between the ground and the crossover duct.

INSTRUCTIONS FOR HVAC CONTRACTORS

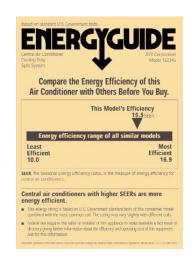
The use of properly specified HVAC equipment and its quality installation are essential to meeting the energy efficiency targets of ENERGY STAR qualified homes. This involves:

□ HVAC equipment ratings

Cooling and heating equipment efficiencies must meet or exceed the performance ratings specified on the ENERGY STAR Qualified Home Site Installation Checklist (see **RESOURCE SHEET 3**).

Proper Sizing of Air Conditioning Equipment

Correct sizing of air conditioning equipment, while not an ENERGY STAR requirement, is an important element of a properly installed home. ENERGY STAR qualified homes are equipped with advanced windows, air-tight construction details and improved insulation that significantly reduce heating and cooling loads compared to a standard home. All too often cooling equipment is oversized. Properly sized equipment leads to a number of benefits for the homeowner compared to oversized equipment, including:





- · Lower first cost to purchase the equipment
- More effective dehumidification of the home interior, resulting in diminished likelihood of having moisture problems
- · Decrease in overall energy use
- Less frequent on-off cycling of the equipment, decreasing wear and tear and resulting in longer service life, less frequent need for repairs and increased efficiency

EPA and MHRA have produced guidelines for the proper sizing of cooling equipment for ENERGY STAR qualified manufactured homes based upon the size and location of the home. www

